U.S. EPA Environmental Technology Verification Program
Advanced Monitoring Systems (AMS) Center

Air Stakeholder Committee Teleconference
Thursday, April 27, 2006
1:00 pm – 2:30 pm *Eastern*

Teleconference Meeting Minutes

AGENDA

Welcome, Agenda, and Meeting Objectives	Gretchen Hund, Battelle
ETV Program Update	Amy Dindal, Battelle
Stakeholder Introductions and Insights	Gretchen Hund/Stakeholders
Update on Technology Categories	Tom Kelly, Battelle

- Dioxin Emission Monitoring Systems (EMSs)
- Personal Cascade Impactor Sampler (PCIS)
- Mercury Continuous Emission Monitors (CEMs)
- Leak Detection

Potential Technology Categories	Tom Kelly

- Semi-Conductor Industry Emission Monitoring- Applied Materials
- Ultrafine Particulate Monitoring
- Continuous Particulate Emission Monitor - MSI Mechanical Systems

Hot Topics	Gretchen Hund
Next Meeting	Gretchen Hund
Wrap-up and Review of Action Items	Rachel Sell, Battelle
Adjourn	

ATTENDEES

Stakeholder Committee Members:
Ernest Bouffard, Connecticut Department of Environmental Protection
Rudy Eden, South Coast Air Quality Management District
Will Ollison, American Petroleum Institute
Roy Owens, Owens Corning
Lindene Patton, Zurich North America
Joann Rice, EPA/OAQPS
Donald Stedman, University of Denver

ETV AMS Center Staff:
Amy Dindal, Battelle
Bob Fuerst, EPA/RTP
Gretchen Hund, Battelle
Tom Kelly, Battelle
Rachel Sell, Battelle

Welcome, Agenda, and Meeting Objectives

Gretchen Hund welcomed the committee stakeholders to the second AMS Center Air Stakeholder Committee teleconference of 2006. Ms. Hund stated that this teleconference will be the first teleconference to use Live Meeting as part of a Stakeholder Committee meeting; she hopes the stakeholder group likes this format of the teleconference.

ETV Program Update

Amy Dindal, Battelle AMS Center Verification Testing Leader, provided an update on the ETV Program, including an overview of the 2nd International Environmental Technology Verification Forum held in Vancouver on March 28 and the availability of the recently published ETV Program Case Studies document available on the ETV web site. This document includes a case study on the ambient ammonia verification test. Regarding the AMS Center, Ms. Dindal summarized recent water, water security, and air verifications that have either been completed or are in progress. Finally, she discussed the future of the ETV Program and the impact of the current funding situation on the sustainability of the AMS Center.

Bob Fuerst, EPA Project Officer for the AMS Center, thanked the stakeholders for their continued support and said to let him or Ms. Dindal know of any potential ideas or sources of funding.

Will Ollison asked if the mobile mass spectrometer was adaptable to air monitoring. Ms. Dindal said the vendor participating in the verification was Constellation Technology who had their CT-1128 Portable GC-MS verified. Battelle will follow up with Constellation Technology to see if their technology is adaptable to air monitoring.

Stakeholder Introductions and Insights

Ms. Hund asked each stakeholder to provide a brief introduction, describe his or her role within their organization, and any ideas they may have regarding leads for long-term collaborations for the AMS Center to pursue.

Don Stedman discussed measuring ammonia emissions from mobile sources. About 25 percent of NOx emitted from cars is in the form of ammonia, based on data he had seen from Great Britain.

Rudy Eden suggested looking into the Innovative Clean Air Technologies Program, a California Air Resources Board (ARB) program that co-funds the demonstration of innovative technologies that can reduce air pollution. An action item was made to contact Jeff Cook at ARB to learn more about the program.

Will Ollison would like to see additional instruments provided for criteria air pollutants.

Lindene Patton shared two observations with the group. She is seeing a lot of international ETV efforts underway related to carbon emissions monitoring and wondered if there were technologies available to assist with this type of monitoring. She also said there is a need for improved monitoring for vapor intrusion. States are reviewing the equipment they are using for vapor intrusion monitoring. Finally, Ms. Patton said she's seeing a need to measure volatile polychlorinated biphenyls (PCBs). People are using different filter-based techniques in site evaluations and cleanups.

Ms. Dindal said that regarding vapor intrusion, the AMS Center approached EPA's Office of Solid Waste and Emergency Response and concluded that there were not enough commercially available vapor intrusion technologies to warrant testing, but would keep the technology category on their radar screen for later consideration.

Joann Rice said that EPA is including ammonia monitoring in the new NCORE network and starting to look at technologies in this area. She also said that technologies that can measure speciated mercury, continuous nitric acid, and continuous particulate matter (coarse) are of interest, but not ready for prime time.

Update on Technology Categories

Tom Kelly provided an update on technology categories currently in the verification process. PowerPoint presentation slides were distributed to all stakeholders before the teleconference, but were also available as part of the Live Meeting. Four air verifications are either in development or nearly completed.

Dr. Kelly reviewed the **Dioxin Emission Monitoring Systems (EMSs)** verification test. He reviewed the collaborators who provided co-funding including EPA's Office of Solid Waste, Office of Research and Development, and OAQPS, as well as the Chlorine Chemistry Council.

He then described the four technologies that are undergoing verification and the test design. Dr. Kelly briefly described some of the draft results.

Dr. Kelly said the y-axis on the graph depicted the total toxicity equivalents (TEQ) of polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/Fs) reported in terms of nanograms per dry standard cubic meter. The dioxin EMS reports are currently in peer review. The reports are being reviewed by Tom Logan, Ernie Bouffard, and representatives from the co-funding organizations.

Dr. Kelly reviewed slides detailing the verification test of a **Personal Cascade Impactor Sampler (PCIS)** for collection of ambient particulate matter (PM). One technology is currently undergoing verification. Dr. Kelly briefly described some of the draft results. The final report is anticipated in the July 2006 timeframe.

Responding to several stakeholder questions, Dr. Kelly said that so far the PCIS flow testing simulated an unloaded (i.e., unrestricted) impactor. He also said that under a later task, flow restrictions will be imposed to determine flow performance under a range of pressure drop conditions. Dr. Kelly said in terms of cut-sizes, there are up to eight stages below five microns. Acceptance testing, in which human volunteers will wear the PCIS for 48 hours, will begin shortly. The final report on the PCIS is expected by July.

Dr. Kelly moved to the third technology category, **Hg CEMs Round III**. He described the Indiana facility hosting the upcoming verification test scheduled for the June-July 2006 timeframe, and reported that two vendors are likely to participate. Dr. Kelly said that the verification test will now be referred to as a test of mercury monitors because one of the participating technologies is a sorbent sampling technology and not a continuous emission monitor (CEM). Dr. Kelly also discussed the reference sampling that will be conducted at the facility. (Post-meeting note: Two additional vendors have committed to participate, Thermo Electron, a CEM vendor, and ESC, Inc., a sorbent sampler vendor.)

Dr. Stedman brought up an issue regarding mercury calibration and offered to forward original literature on the controversy about the vapor pressure of mercury.

Dr. Kelly reviewed the final technology category, **Remote Leak Detection Devices.** He noted that discussions are still underway within the ETV/AMS Center to perform a data verification of existing American Petroleum Institute (API) lab data on these technologies. API already funded laboratory testing of detection of petroleum hydrocarbons with two leak detection infrared cameras. Dr. Kelly described other recent developments for remote leak detection device testing with EPA Region 6 and a separate development with the American Chemistry Council (ACC). ACC is interested in conducting lab testing for chemicals other than petroleum hydrocarbons.

Potential Technology Categories

Dr. Kelly provided an update on the status of three potential technology categories. Applied Materials is a vendor interested in the AMS Center verifying their technology for characterizing air emissions using a Fourier Transform Infrared/Mass Spectrometer (FTIR/MS) instrument that is incorporated into a mobile laboratory. Their main application is **Semi-Conductor Industry Emission Monitoring.** Dr. Kelly said the next step would be to approach the semi-conductor

industry or trade associations to secure co-funding to support the test. Dr. Stedman thought another vendor might exist and noted that a lot of groups seem to be interested in this type of monitoring. Stakeholders seemed to be in concurrence with this technology category.

Dr. Kelly said that Siemens Power Generation contacted Battelle with interest in **Ultrafine Particulate Monitoring** from emission sources, specifically, particulate testing (EPA Method 5 and Method 202, filterable and condensable particulates respectively). He then noted that in previous meetings Judy Chow recommended ultrafine particulate technologies for ambient air monitoring. She has drafted a manuscript with some preliminary comparison test data, but recommending waiting to view the information until after the paper is published.

Mr. Eden said ultrafine particulate monitoring for emissions sources and in ambient air is of great interest and importance in California's Southwest Basin. Regarding ambient air monitoring, Mr. Eden said that he knows of some technologies that would be of interest. Joann Rice noted that there is a growing interest in the health effects community for these technologies. An action item was made to contact Mr. Eden to discuss ultrafine particulate monitoring further.

Regarding partnering opportunities, Ms. Rice will try to locate a contact at EPA who could possibly help get our foot in the door with the health effects research community.

Dr. Kelly provided information on MSI Mechanical Systems, a **Continuous Particulate Emission Monitor** vendor interested in verification. Dr. Kelly was planning on meeting with the vendor in early May at the EPRI CEM Users Group meeting in Columbus. Roy Owens commented that such a monitor could be valuable for monitoring processes, as well as determining emissions.

Hot Topics

Ms. Hund asked the stakeholders if they were aware of any new opportunities that the ETV/AMS Center should be exploring. No new opportunities were raised during the call.

Review of Action Items

1. Battelle will follow up with Constellation Technology to see if their portable GC-MS technology is adaptable to air monitoring.
2. Battelle will contact Jeff Cook at California ARB to learn more about the Innovative Clean Air Technologies Program.
3. Dr. Stedman said that he will forward original literature on the controversy about the vapor pressure of mercury.
4. Battelle will follow up with Mr. Eden to discuss ultrafine particulate monitoring further.

Future Meeting Schedule

Ms. Hund said that because of busy travel schedules during the summer months, another teleconference in September would be ideal. The stakeholders agreed to a teleconference in this timeframe. It was agreed by several stakeholders that the Live Meeting format was very efficient and worth continuing.

Ms. Hund thanked all of the stakeholders for attending the meeting and contributing so much to ETV. The call adjourned at 3:15 pm.